Homework 16B p. 345-355

1.

The following table shows marginal costs and benefits of the optimal quantity of pollution abatement that will occur at a local factory.

|  |  |  |
| --- | --- | --- |
| **Quantity of pollution abatement** | **Marginal cost** | **Marginal benefit** |
| 700 tons | $100,000 | $ 20,000 |
| 600 tons | 60,000 | 30,000 |
| 500 tons | 40,000 | 40,000 |
| 400 tons | 20,000 | 60,000 |
| 300 tons | 10,000 | 80,000 |
| 200 tons | 5,000 | 160,000 |

(a) What is the optimal level of pollution abatement? Why?

(b) If the marginal benefit of pollution abatement were to increase by $30,000 at each level because of the factory’s desire to improve its image and environment, what would the optimal level be? Why?

(c) What might cause the optimal level of pollution abatement to be 400 tons?

(a) 500 tons because the marginal cost of pollution abatement just equals the marginal benefit of $40,000.

(b) 600 tons. MC of $60,000 equals MB of $60,000.

(c) If marginal costs increased by $40,000 or the marginal benefit declined by $40,000.

[text: E pp. 345-346; MI pp. 345-346]

2. Suppose a local coffee shop in the downtown area decides to purchase a neighboring abandoned lot and convert it into a garden area with outdoor seating.

(a) Does this decision create an externality? If so, what kind?

(b) Despite the city’s positive response to the coffee shop’s renovation, other businesses in the area have not followed suit in renovating the many decrepit buildings and abandoned lots. How might the presence of an externality be in part the cause of this?

(c) In response to the lack of effort on the part of businesses to renovate the downtown area, city council members to take action. What are some ways that the city government could promote this kind of revival?

(a) The creation of the garden space does produce an externality. While the new area will likely increase the number of customers the coffee shop receives, it also benefits neighbors to the shop and those living in the city by improving the look of the downtown area. This is a positive externality.

(b) Businesses determine their levels of business based on the demand they have for their services. If businesses estimate that the marginal benefit (additional customers) they would gain by investing in construction and renovation do not offset the costs of the renovation, they won’t decide to refurbish the area. The marginal benefit, however, may be understated due to the presence of a positive externality. Demand for the renovation would actually be higher if the marginal benefit for those living in the city were included. The exclusion of this marginal benefit in the business’s calculation of demand makes the renovation appear like a bad investment, when it would actually benefit the community as a whole.

(c) The city could pursue a number of policies. First, it could actually force downtown businesses to contribute to the renovation of the downtown area. It could also levy taxes on citizens and businesses to raise funds to finance the renovation. It could also provide subsidies for businesses that decide to renovate or the government could simply decide to do the renovation itself.

[text: E pp. 345-347; MI pp. 345-347]

3. Explain the problem of adverse selection. How might this problem affect transactions in the insurance industry?

The adverse selection problem is an information problem that arises between buyer and seller. Buyers of a product who have the largest potential to benefit or to impose costs on a seller are also the ones most likely to enter into a contract with a seller, although the seller does not know this information ahead of time. In insurance purchases, for example, the people most likely to receive a payout from insurance are the very ones most likely to purchase insurance, but information about high-risk buyers is not known ahead of time by the seller. This adverse selection problem may result in losses that reduce the number of sellers in a private insurance market. Government intervention may be necessary to require social insurance so that a larger pool of people, rather than those most likely to benefit, purchase the insurance. [text: E p. 350; MI p. 350]

4. (Last Word) What is the Lojack? How does it create a positive externality?

The Lojack is a device planted in a car (or truck) that emits radio transmissions indicating the location of the vehicle. It is used to find a car in case it is stolen. There is an obvious benefit to the vehicle owner because the recovery rate for cars with the Lojack is 90% versus only 60% for cars without the system.

There is also a spillover benefit to society when people pay to install the Lojack in their vehicles. The Lojack enables police to arrest more car thieves, which reduces the number of car thieves who might steal other cars. Also, the device helps police identify chop shops that cut up the stolen cars for re-sale as auto parts. This reduction in chop shops also deters the theft of other cars without the Lojack device. In fact, two economists have estimated that the marginal social benefit (positive externality) from this device is 15 times greater than the marginal cost of the device. [text: E p. 352; MI p. 352]